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Norman Wells Socio-Economic Impact
Monitoring Program
Summary Report

Report 1-86

Northern Affairs Program





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Monitoring Program
Summary Report

Report 1-86

Prepared for:

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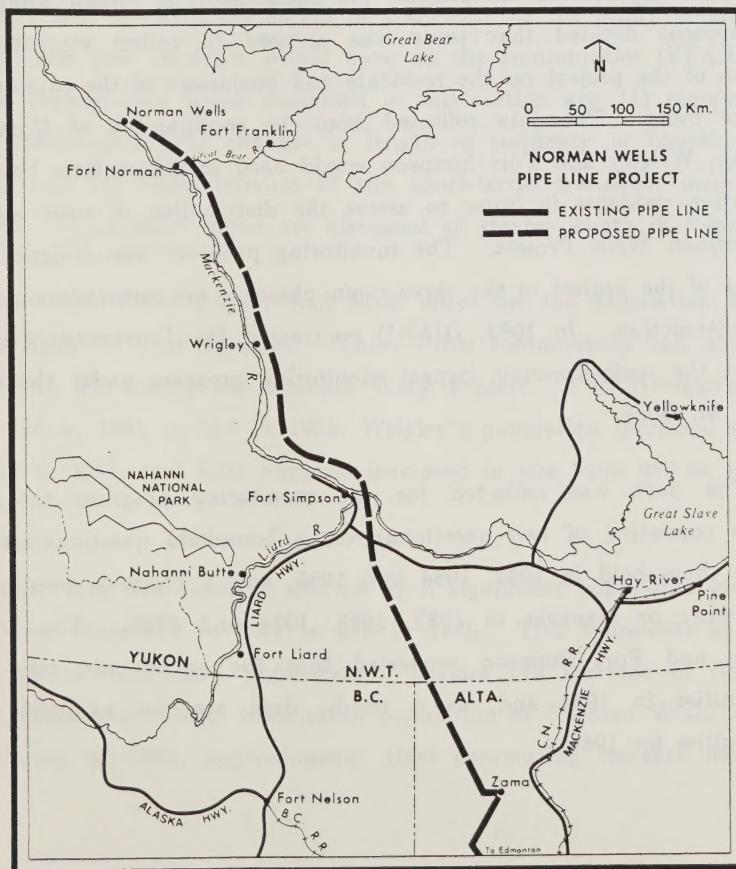
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1. BACKGROUND

1.1 Norman Wells Oilfield Expansion and Pipeline Project

In 1981, the federal government approved the application of Esso Resources Canada Ltd. and Interprovincial Pipe Lines Ltd. to construct the Norman Wells Oilfield Expansion and Pipeline Project. This project, the first large scale industrial development to take place in northern Canada, called for an expansion of production at the Norman Wells oilfield from 180,000 m³ per year to 1.5 million m³ and the construction of a 324 mm pipeline from Norman Wells to Zama, Alberta where it would connect with the existing pipeline system (Green and Bone, 1984, p. 10).

Figure 1



Prior to approval of this project, the Department of Indian Affairs and Northern Development (DIAND) referred the application to the Federal Environmental Assessment Review Office (FEARO) for formal review, while the National Energy Board (NEB) conducted its own review on the proposed pipeline. Both reviews resulted in approval of the project but these two agencies had certain reservations. While the regulatory agencies recognized the potential economic benefits of such a project, they were concerned about the flow of benefits to northerners. Both agencies also expressed concern over the potential negative social impacts that a project of this type could have on the impacted communities, although both concluded the negative impacts could be limited to acceptable levels.

1.2 Norman Wells Socio-Economic Impact Monitoring Program

After approval of the project, the Department of Indian Affairs and Northern Development decided that there was a need to collect statistical data on the impacts of the project on the residents and businesses of the communities along the pipeline route. The data collected from the communities of Norman Wells, Fort Norman, Wrigley and Fort Simpson would need to differentiate between native and non-native residents in order to assess the distribution of costs and benefits from the Norman Wells Project. The monitoring program was designed to identify the impacts of the project in the three main phases - pre-construction, construction and post-construction. In 1982, DIAND contracted the University of Saskatchewan to conduct the socio-economic impact monitoring program under the direction of Dr. Robert M. Bone.

The data was collected for the monitoring program through community surveys consisting of two questionnaires; a household questionnaire given to each head of household in 1982, 1984 and 1985, and a business questionnaire given to each owner or manager in 1982, 1983, 1984 and 1985. The band councils of Wrigley and Fort Simpson requested that the survey not take place in their communities in 1984 and, as a result, data are not available for these two communities for 1984.

This monitoring program, the first of its kind in Canada, is described in much greater detail in Report 2-86 and its methodologies are examined in Report 2-83, Report 1-84 and Report 1-85. Overall, there have been twenty-six reports written by the staff of the Norman Wells Socio-Economic Monitoring Program and this report summarizes many of their major findings. It should be noted that this report is intended as a summary and previous reports in the series should be examined for specific and in depth analysis.

2. MAJOR FINDINGS OF THE MONITORING PROGRAM

2.1 Demographic Impacts

The major demographic concern related to the construction of the Norman Wells Project was the expected influx of transients to the study communities and the impact these new residents would have on the communities (FEARO, 1981, p. 59). Three demographic topics examined in this section are: (1) population size of the study communities, (2) changes in length of residency of households in each community, and (3) characteristics of the short-term, transient, members of the communities. These three topics are discussed at greater length in Report 2-85.

The Norman Wells Project had little effect on the population size of Fort Norman, Wrigley or Fort Simpson. These three communities had annual growth rates of 1% to 2% during the Norman Wells Project. Fort Norman's population rose from 286 in 1981 to 311 in 1985; Wrigley's population increased from 137 in 1981 to 146 in 1985; and Fort Simpson increased in size from 980 in 1981 to 1027 in 1985.

Norman Wells was strongly affected by a significant population increase as its population rose from 420 in 1981 to 678 in 1985. This represents an increase of over 60% in the permanent population. Besides the increase in its permanent population, there was a large work camp population at Norman Wells. At its peak in the summer of 1983, approximately 1000 commuting workers lived in these camps.

The 1985 length of residency variable indicates the magnitude of in-migration into each of the communities. In Norman Wells, over 70% of the households have resided in the community for five years or less. In the three predominantly native communities, households established in the past five years comprised less than 25% of the total households.

There are vast differences between native and non-native households in terms of length of residency. For example, native households had an average length of residency of over 31 years for the region in 1985 while the average length of residency for non-native households was only 4.7 years.

The community of Norman Wells clearly experienced the greatest impact in terms of immigration of short-term or transient residents. A transient is defined as having resided in the community for five years or less. Some socio-economic characteristics of these transients are: (1) over 80% of the transient households in Norman Wells were non-native; (2) approximately 80% had full-time employment; and (3) the majority of transient households were families, i.e., households with at least one child.

2.2 Impacts on the Activity of Household Members

In each survey season, the principal activity of each household member was recorded by the head of the household as: (1) full-time employment; (2) part-time employment; (3) unemployed; (4) housewife; (5) retired; (6) student; or (7) pre-schooler. Changes in these categories reveal, among other things, shifts in community employment and unemployment.

Extremely high levels of employment in Norman Wells were recorded in each of the survey seasons with approximately half of the residents with full-time jobs (Report 9-85, p. 6). In Fort Norman, the proportion of residents with employment rose in 1984, at the height of construction, but returned to 1982 levels by 1985. Similarly, the proportion of residents with employment in Wrigley and Fort Simpson, approximately 22% and 37% respectively, remained consistent between 1982 and 1985.

While employment levels in the three predominantly native communities were consistent in 1982 and 1985, the unemployment levels increased significantly from 1982 to 1985. In 1985, the proportion of residents who declared their principal activity as unemployed stood at 24% in Fort Norman, 21% in Wrigley and 20% in Fort Simpson. Since employment levels did not drop, the question is, who are these unemployed people? The proportion of residents identified as students and housewives declined in each of these communities from 1982 to 1985, suggesting that many women and students attempted to enter the labour force from 1982 to 1985 but with limited success (Report 9-85, p. 7). This explanation is further supported by noting that 70% of the residents identified as students in 1982 but no longer students in 1985, were unemployed in 1985. The unemployment problem was more severe among natives than non-natives in the region (Report 9-85, p. 18).

2.3 Impacts on Income in the Region

From the point of view of the long-term residents of the region, an important measure of the success of the Norman Wells Project is the flow of benefits generated by the project. The most common way for residents to gain the economic benefits is through employment and increases in household income. Therefore, a key issue in the success or failure of the Norman Wells Project to long-term residents is, did the incomes of northerners rise as a result of the construction of the Norman Wells Project? The answer to this question may be answered by examining the household incomes of the *permanent* residents of the region.

It is apparent that overall incomes rose at the height of construction of the Norman Wells Project with the average income for all households in Norman Wells and Fort Norman, the communities participating in the 1984 survey, rising from \$37,900 in 1982 to \$54,600 in 1984. However, a more difficult issue to assess is whether there was an increase from 1982 to 1985 in the incomes of the permanent residents of the region. This impact should be reflected in differences between incomes of permanent residents in the pre-construction and post-construction periods.

There was a change in the structure of the income question between the 1982 and 1985 household questionnaires (Report 1-85, p. 14). This change contributed to a much higher response rate for the income question in 1985. The result of the higher response rate is that comparisons between the two years are difficult. As well, there was a large in-migration of residents to Norman Wells between 1982 and 1985 and their incomes may disguise the impacts on the incomes of the long-term residents. To alleviate this problem the income of those households which responded to the income question in both 1982 and 1985 is compared, allowing a direct comparison of household incomes, as the same households comprise each sample. Short-term residents are excluded, for to have answered the question in both years the household would have to have resided in the region for at least four years.

Figure 2

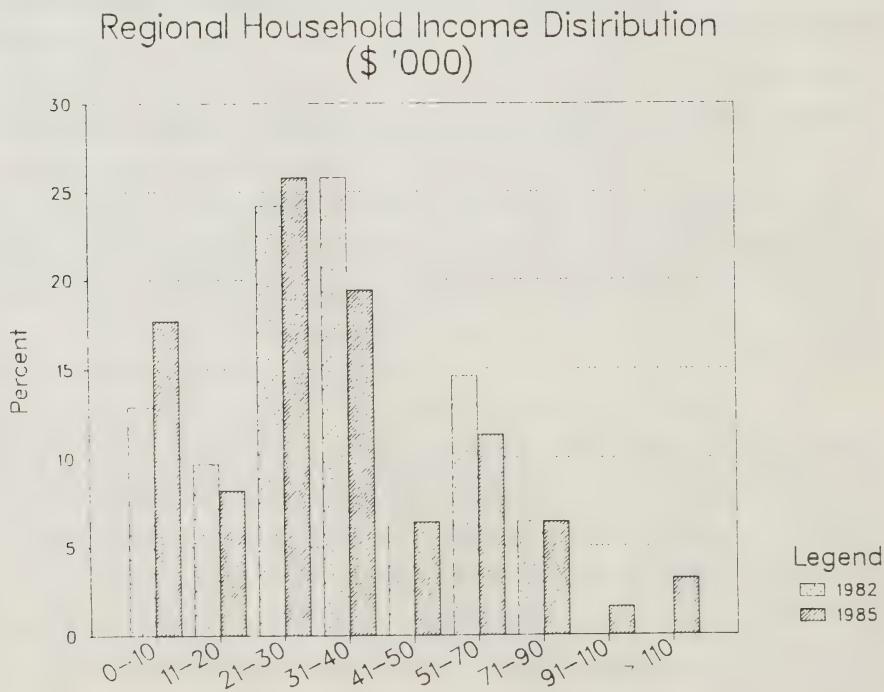


Figure 2 indicates the 1982 and 1985 income distributions for the region. There were sixty-two households answering the income question in both 1982 and 1985 and their average length of residency was 16 years in 1982 and 19 years in 1985.

A comparison of the income distributions from 1982 to 1985 for the *permanent* households indicates that there was little increase in income for northern households. There were some households whose incomes continued to be very high at the end of the project while most returned to 1982 levels and some even decreased from 1982 to 1985.

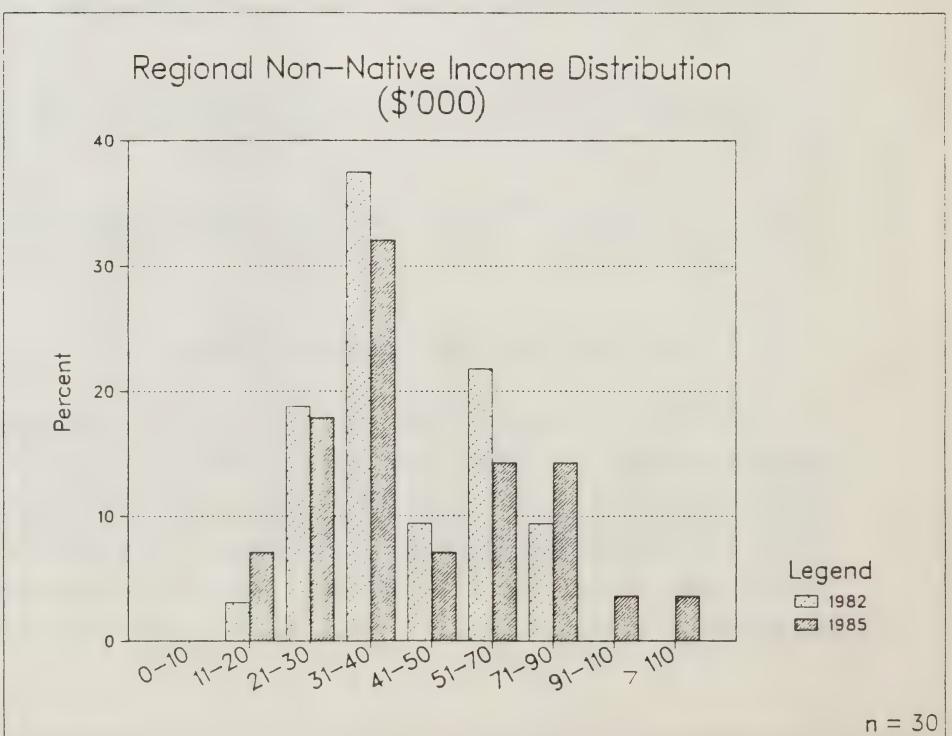
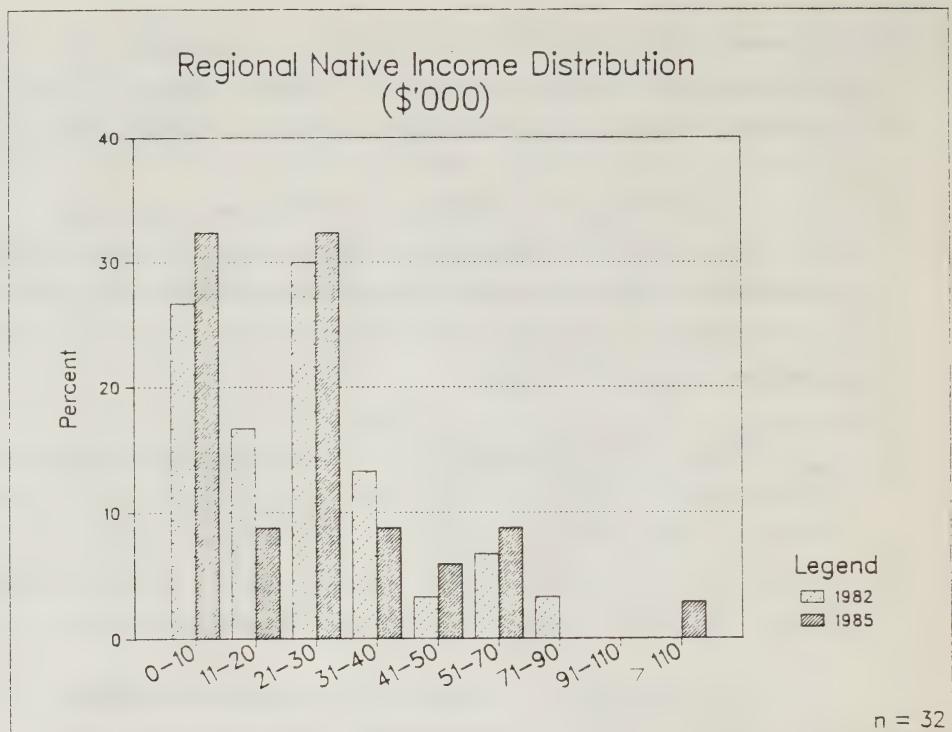
There were, and continue to be, large differences between native and non-native income levels in the region even among the long-term residents (Figures 3 and 4). These differences were not changed as a result of the Norman Wells Project for the households which responded to the income question in 1982 and 1985. The native - non-native breakdown of household incomes indicate:

1. the median income values for non-natives were \$37,500 in 1982 and \$37,777 in 1985;
2. for natives, the median income values were \$22,220 in 1982 and \$22,727 in 1985;
3. there are substantial differences in the native and non-native income distributions with natives skewed toward the lower income categories; and
4. the gap between native and non-native incomes in the four communities has not closed as a result of the construction of the Norman Wells Project.

2.4 Impacts on Consumer Spending Patterns

Indirect benefits can be obtained by a community through increased consumer spending stimulated by higher wages from an industrial project. As disposable incomes increase, local retail and service outlets have increased opportunity to capture consumer spending and hire more employees, thus recycling the direct wage benefits back through the local economy. Report 7-85 examines the spatial distribution of consumer spending in detail and the major findings are highlighted

Figure 3 and Figure 4



here.

During the construction of the Norman Wells Project, the amount of consumer spending which took place in Norman Wells rose dramatically. Residents of Norman Wells increased spending in their own community from 33% of the total spending in 1982 to 51% in 1985. The low amount of spending in Norman Wells in 1982 relates to the small number of retail outlets in that community and the high number of recent migrants to Norman Wells who maintained contacts with southern Canada. As households in Norman Wells increased spending in their own community, the importance of Edmonton as an alternate location for consumer spending significantly declined.

The residents of Fort Norman, Wrigley and Fort Simpson did almost all of their consumer spending in their own community during the Norman Wells Project. Less than 15% of the shopping was done in southern Canada by residents of these communities in each of the survey years compared with an average of 36% spent in southern Canada by residents of Norman Wells in the three survey seasons (Report 7-85, pp. 3-4).

The specific consumer goods most commonly purchased outside of Norman Wells during the project were groceries and clothing. Two factors may have contributed to these specific items being purchased in the south. First, food and clothing prices were significantly higher in Norman Wells and other northern communities, making it attractive for the more mobile residents to purchase clothing and groceries in the south. The second factor, alluded to above, relates to the lack of variety of food and, especially, clothing products with the small number of retail outlets found in Norman Wells in 1982. Residents at Norman Wells either travelled to Edmonton frequently or had someone else, such as a rotational worker, purchase items for them. In Fort Norman, Wrigley and Fort Simpson durable items, such as appliances, furniture or automobiles were most often purchased in the south. This pattern is simply a reflection of these items not being available in these communities.

The impact of residents not doing their entire consumer spending in their own communities was quite substantial. In 1985, over \$1 million was estimated to have leaked from the local economy through consumer spending in southern Canada. During the entire construction period of the Norman Wells Project at least \$5.2 million was estimated to have been spent in southern Canada by residents of the four study communities (Report 7-85, p. 25).

2.5 Impacts on Country Food Consumption

Several individuals appearing at the community hearings conducted by the NEB and FEARO expressed concerns over the potential impacts that the Norman Wells Project could have on traditional activities such as hunting and trapping. The importance of traditional activities to native people in the Mackenzie Valley has been well documented (Bone 1986, Berger 1977 and Usher 1978). One of the aspects of these traditional activities is the high consumption of *country food* by native people in the Mackenzie Valley. Any change in traditional activities by residents in the four study communities should reflect itself in their consumption of country food.

During the construction of the Norman Wells Project the consumption of country food increased in the four study communities. The shift was a decline in the proportion of households using little country food and a subsequent increase in the proportion of households with 16% to 60% of their diets as country food (Report 3-85, p. 11). The proportion of households using a high amount of country food remained constant from 1982 to 1985. At the community level, Norman Wells residents consumed the least country food followed by Fort Simpson, then Fort Norman, while Wrigley residents consumed the most country food. For example, over 70% of the residents of Wrigley estimated that country food comprised more than 60% of their total diet.

Among native residents of the four communities, country food consumption did not change from 1982 to 1985. Approximately 26% of the native residents consumed less than 15% of their diets as country food in 1985 while 46% had

between 15% and 60% country food in their diet and 28% of the native household consumed more than 60% of their diet as country food (Report 3-85, p. 29). From this analysis, it is apparent that increased involvement in the wage economy during the Norman Wells Project did not reduce the level of consumption of country food.

2.6 Impacts on Perceptions about Jobs and Development

One of the questions that has long been debated by politicians and academics is the desirability of economic development of the Canadian north. The Norman Wells Socio-Economic Impact Monitoring Program offered a unique opportunity to record the attitudes of the residents of the four study communities towards jobs and increased economic development of the Mackenzie Valley and analyze how these perceptions changed during the construction of the Norman Wells Project.

There is an exceptionally high perceived need for more jobs by the residents of Fort Norman, Wrigley and Fort Simpson. In fact, no one from these centers responded *no* to the need for more jobs in 1985. In Norman Wells, where employment levels are very high, the perceived need for more jobs rose in the post-construction period but not to as high of levels as seen in the other three communities. Significantly, natives perceive a greater need for more jobs in the region than do non-natives.

On the issue of increased economic development in the Mackenzie Valley, the majority of residents in all four communities were in favour of more development in each survey season (Report 4-85, p. 8). However, there was a drop in support for increased development from 1982 to 1985 in the region. The drop in support was most severe at Fort Simpson and may largely be attributed to a drop in support among the native population at Fort Simpson. At a regional level, the Metis residents support increased economic development of the Mackenzie Valley much more than the Status Indian respondents.

One of the innovations to come out of the construction of the Norman Wells Project was the formation of Shehtah Drilling, a joint venture between Esso Resources Canada Ltd. and the Dene Nation and Metis Association of the N.W.T..

At the request of the Norman Wells hamlet council, a question was added to the 1982 household questionnaire on the desirability of such joint ventures between private firms and native organizations. Responses to the question reveal that over 60% of the respondents were in favour of joint ventures in both 1982 and 1985 while there was a significant increase in the respondents who were undecided about joint ventures between 1982 and 1985 (Report 6-85, p. 9). However, while overall support remained constant, support among native residents declined while support among non-natives increased between 1982 and 1985 in the four study communities. At the community level, Norman Wells increased support between 1982 and 1985, Fort Norman remained stable, Wrigley had an extremely large proportion of undecided and Fort Simpson showed the largest decline in support.

2.7 Perceived Social Impacts

Social impacts are an important aspect of monitoring, but are a difficult area to measure. In an attempt to measure these impacts, two approaches were utilized by the Norman Wells Socio-Economic Impact Monitoring Program. First, secondary data from the GNWT was analyzed in order to evaluate its usefulness in monitoring social impacts. In this evaluation, secondary data was found to have serious deficiencies and, at best, would have to be relegated to a supportive role to primary data collection (Report 6-84). The second approach was to add questions designed to assess: (1) the perceived social impacts of the Norman Wells Project on the study communities; and (2) the overall impact, social and economic, of the Norman Wells Project on native peoples in the region. These questions required the head of the household to evaluate the overall impact of the project as well as the level of impact of several specific areas of social concern. This second approach, although not as precise, allowed the people of the region to evaluate the impact of the project based on their personal experiences.

The residents of Norman Wells generally feel that overall the project had a positive social impact on their community. All of the specific areas of social concerns were identified by 60% of the respondents as having some effect on the community. However, there were three areas identified as especially strong impacts:

(1) improved community services and facilities were identified as the most positive specific impact; while (2) the problem of transients and (3) increased alcohol and drug abuse were two specific negative social impacts having a strong effect on Norman Wells.

Residents in Fort Norman and Wrigley perceived little *net* impact on the overall social conditions in their communities. In both communities, increased alcohol and drug abuse was identified as the strongest negative impact of the Norman Wells Project. The provision of job experience and training was identified by over 80% of the respondents in Fort Norman and 70% in Wrigley as having some effect on their community (Report 5-85, pp. 9-10). In these two communities, most of the areas of specific social concerns were not perceived by many households as being an impact of the project. This is especially true in Wrigley where such problems as increased family problems and increased crime were identified by less than 10% of the respondents as impacts of the Norman Wells Project (Report 5-85, p. 29).

The residents of Fort Simpson also perceived little *net* effect on social conditions as a result of the Norman Wells Project. However, as in Norman Wells, all of the areas of specific social concerns were identified by over 50% of the respondents as having some effect on their community. The strongest impact of the Norman Wells Project on Fort Simpson, as perceived by its residents, related to increased alcohol and drug abuse.

In terms of the overall social and economic impact of the Norman Wells Project on the native peoples in the region there is a dichotomy of views. The residents in the region generally perceive that the project was good economically for natives by providing jobs, improving the native economy and giving job experience and training. However, there is also recognition by the residents in the region that there were negative social impacts to native people with the two strongest being increased alcohol and drug abuse and disruption of the native way of life.

When forced to state the overall *net* impact to native people, the majority of

residents felt that the positive economic and social effects equalled the negative social impacts, stating the *net* impact to be no effect. There were several households at both ends of the continuum as well, with 23% of the Norman Wells respondents perceiving the project to be very good for natives while 24% of respondents in Fort Simpson felt the project was very bad for natives. In Fort Norman and Wrigley, approximately 50% of the respondents perceived the project to have no *net* effect on natives with the remainder of the respondents being evenly split between perceiving the project to be good or bad for natives in the region (Report 5-85, pp. 15-18).

2.8 Employment Impacts

One of the pivotal points in terms of the native population benefiting from the construction of the Norman Wells Project was their ability to capture employment opportunities. This point was raised in the public hearings conducted by FEARO and in their final report to the federal government in which it was stated that the proponents should:

make use of existing or modified employment training plans such as Hire North, so that as many local workers are involved in the pipeline construction and operational activities as is practicable. (FEARO, 1981, p. 78)

In terms of increased employment, the Norman Wells labour force was the only one to increase significantly in size. At Norman Wells, the labour force increased from 685 employees in 1982 to 1498 in 1984 and then fell back to 729 employees in 1985 (Report 8-85, p. 3). The native portion of the labour force remained consistent in each survey season at around 22%. This means that as the labour force expanded at Norman Wells, the number of natives employed by Norman Wells businesses increased at an equal rate.

There was, however, a high turnover for positions at Norman Wells. Over 56% of the employees had been working for their present firm for less than a year in 1985. As well, over half of the positions held by natives lasted for less than three months.

A key to spreading the employment benefits of the Norman Wells Project to other northern communities was the use of a rotational workforce. Commuters formed over 55% of the Norman Wells labour force in the peak construction period in 1984. Of the commuters to Norman Wells, 60% were from communities in the Northwest Territories (Report 8-85, p. 20). The regional centers such as Yellowknife, Fort Smith and Inuvik contributed many of the northern commuters but small native communities like Fort Good Hope and Fort Norman also made strong contributions.

2.9 Business Impacts

During the public review process, the business sector in the region was extremely enthusiastic about the possibilities of the Norman Wells Project. This group felt that the opportunities presented by the project would vastly improve the lagging economy of the Mackenzie Valley (FEARO, 1981, p. 54). Areas of interest to the business sector included: (1) expansion in the number of businesses, (2) expansion in the geographic trading area of businesses, (3) the ability of local northern businesses to obtain project contracts, and (4) leakage of economic benefits from the project to southern Canada.

The Number of Businesses

An expansion in the number of businesses and public service agencies was expected to take place at Norman Wells and, to a lesser degree, in the other three communities as a result of the Norman Wells Project. This expansion is reflected by the number of businesses and public service agencies beginning operations since 1980. In Norman Wells, there were 37 new businesses established, which is substantially more than in the other three communities where 15 firms began operations in Fort Simpson, 4 in Fort Norman and 2 in Wrigley.

Changes in Trading Areas

In each of the four business surveys, a question was asked on what proportion of the total business of the firm was done in various communities throughout the

Mackenzie Valley. This question allowed the trading areas for the businesses in each community to be established. There were only minor variations in the trading areas of businesses in each community during the Norman Wells Project.

The Norman Wells business data indicates its role as a regional center. Approximately 80% of the business of firms from Norman Wells occurred in the community. Firms in Norman Wells also do a considerable amount of business in the communities of Fort Norman, Fort Franklin and Fort Good Hope.

Fort Simpson's role as a regional center for the southern Mackenzie Valley is revealed by the fact that only about 85% of the business of Fort Simpson firms is attributed to sales in Fort Simpson. Smaller communities from which Fort Simpson businesses obtain revenue include Wrigley, Fort Liard, Jean Marie River, Nahanni Butte and Trout Lake.

The smallest community, Wrigley, has a very limited business sector. These firms are small and almost all of the firms from Wrigley do all of their business in Wrigley.

Businesses in Fort Norman were the only ones who experienced a significant expansion in their trading areas. Norman Wells became a more important source of revenue for businesses in Fort Norman as the Norman Wells Project proceeded. This is not unexpected as firms in Fort Norman received contracts to do project related work. In 1982, less than 1% of the revenue of Fort Norman businesses was received from Norman Wells but by 1985 this figure had risen to over 5%.

Contracts for Northern Businesses

Northern businesses had some success in obtaining contracts for work on the Norman Wells Project. If a northern business is defined as a firm which has been established in the north for five years or more, then the percentage of northern firms from Norman Wells receiving contracts to work on the project may be broken down as follows. In 1982, over 29% of northern firms received contracts, in 1983 this rose to 42% and peaked in 1984 when 47% of northern firms in Norman Wells

received contracts. In 1985, the proportion with contracts was reduced significantly to 16%. In the other three communities, there were a few northern businesses which received contracts in each survey season.

Business Leakage to Southern Canada

Given the relatively large size of this project and the small number and size of businesses in the region at the beginning of the project, it was expected that much of the total expenditures of the project would be spent in southern Canada (FEARO, 1981, p. 48). In order to determine the amount of project expenditures which leaked to southern Canada the Norman Wells Socio-Economic Impact Monitoring Program added questions to the 1984 and 1985 business questionnaire on the amount of expenditures for each business and the proportion which was spent locally.

The total expenditure for businesses in Norman Wells was considerably higher in 1984, the peak construction year, than in 1985. The proportion of expenditures spent in southern Canada was also much higher in 1984 when over 60% of the expenditures leaked from the region. Since the data are unavailable for 1982 and 1983, the first two years of the project, it is difficult to assess the total leakage from the region. However, if it is assumed that expenditures in 1982 were similar to those in 1985 and expenditures in 1983 were similar to 1984, than an approximate leakage figure may be computed. These assumptions are not unreasonable as it has been noted that the labour force in 1982 was a similar size as the 1985 labour force and the 1983 labour force was only slightly smaller than the labour force in 1984.

Given the above assumptions, the total expenditures for businesses in Norman Wells was \$542 million during the Norman Wells Project. The amount leaked to southern Canada was \$294 million during the project or approximately 54%.

3. ASSESSING THE NORMAN WELLS PROJECT

The Norman Wells Oilfield Expansion and Pipeline Project was the first of several potential oil developments to take place in the Mackenzie Valley. Before this project began there were several questions which could only be answered through the experience of a development taking place. Some of these key questions are:

1. Would the native residents be able to fully participate in an industrial project of this type?
2. Would the native residents be able to withstand the social upheaval resulting from the rapid changes that this project may cause?
3. Would there be a large influx of southerners into these northern communities disrupting the traditional society?
4. Would increased participation in the wage economy result in the destruction of the native culture and traditional activities?
5. Would an *adequate* amount of the benefits from the construction of the project flow to local residents? and;
6. Would most of the benefits flow to southern Canada?

The Norman Wells Socio-Economic Impact Monitoring Program was designed to aid in the answering of these questions by providing an initial database and then measuring changes over time.

In the previous section, several social and economic issues were examined and changes in these areas were discussed. However, to answer these more general questions, evidence from several areas must be synthesized. At this point in the summary report, each of these general questions is examined and the data in respect to this monitoring program are evaluated.

Would the native residents be able to fully participate in an industrial project of this type?

Native residents were able to participate in the construction of the Norman

Wells Project. In each survey season, approximately 22% of the labour force at Norman Wells was native. Thus as the labour force grew, the number of natives employed also increased. In 1984, for example, there were 325 native employees at Norman Wells (Report 8-85, p. 6). However, it has also been noted that native unemployment also increased as native youth and women tried and, for the most part, failed to enter the labour force.

Whether the fact that natives comprised 22% of the labour force is viewed as good or bad, is to a large degree a matter of personal interpretation. It does, however, provide a benchmark for future projects to try to surpass and perceptions of the native residents in the region indicate that there is an overwhelming desire for more jobs in each community. The question which now needs to be asked is, how can the native participation rate be increased? Clearly, one of the keys to obtaining employment on an industrial project, or most other positions in a wage economy, is having the skills required to complete the job. The experience gained by natives on this project will undoubtedly help in getting jobs on future projects. The other method of obtaining the skills to obtain employment is through further education. Continued education and training of native residents in the region is a critical issue in improving their employment prospects. This fact is supported when noting that 78% of non-natives have completed high school and 58% of non-natives are employed. This compares with only 21% of natives who have completed high school and only 27% of natives are employed (Report 9-85, pp. 17-18). It also is going to be extremely difficult for any natives to compete for or obtain any sort of management positions with these low education levels.

To achieve higher education levels among natives in the region all three of the major players are going to have to play a role. First, companies associated with major industrial projects in the north are going to have to continue to expand their local training programs. This will require an investment of time and money on the part of the companies in order for the local residents to obtain the skills which are required for a particular project.

Second, the federal and territorial governments need to expand the educational

opportunities available to native residents. This may be achieved by expanding the number of secondary schools in the north by building high schools in regional centers like Norman Wells and Fort Simpson. Also, there needs to be continued support for the technical schools at Fort Smith and Inuvik and the provision of financial support for natives wishing to attend post-secondary institutes in southern Canada.

Third, the native people and native organizations need to place a much higher priority on education and the need for education in order to be able to get a job. Native parents need to encourage their children to continue their formal education. In the authors' opinion, some of the older natives are discouraging their children from continuing their education because to enter high school often means leaving home. As well as providing financial support for natives entering post-secondary school, native organizations could be providing information to the various bands on the value of education in terms of potential employment. For example, 88% of the unemployed natives in the four study communities in 1985 had never completed high school. As well, over 80% of the natives who had completed high school were employed in 1985 and all of the residents who had completed high school and either technical school or university had full-time jobs.

Would the native residents be able to withstand the social upheaval resulting from the rapid changes that this project may cause?

On the basis of the residents' perceptions of the social impacts, the Norman Wells Project had little effect outside of Norman Wells. The impact of transients, for example, was not identified as a problem in the three predominantly native communities although they had considerable impact on Norman Wells. Potential impacts, such as increased family problems or increased crime were not perceived by residents as having much of an impact on their communities. However, it should be recognized that some of the potential social impacts may take years to detect. Alcoholism was the one major social problem recognized by the residents in all communities as a major negative impact of the Norman Wells Project, particularly on natives.

Would there be a large influx of southerners into these northern communities disrupting the traditional society?

The answer to this question is clearly illustrated by the demographic data discussed in the previous section. Norman Wells was the only community to experience a large increase in its population. Over half of the transients to Norman Wells were families but the community infrastructure seemed to be able to handle the influx although there was some pressure on housing and other community facilities in the initial phase of the project. Increases in the population of the communities of Fort Norman, Wrigley and Fort Simpson were due to natural increases and the normal amount of in and out migration.

Would increased participation in the wage economy result in the destruction of the native culture and traditional activities?

Every indication from the data collected by the Norman Wells Socio-Economic Impact Monitoring Program is that the Norman Wells Project did not affect the traditional native activities. Consumption of country food increased slightly during the construction of the Norman Wells Project. Although incomes did rise somewhat at the height of the construction period, the level of income seems to have little bearing on the level of country food consumption among native households. For example, in 1985 approximately 60% of the native households earning more than \$30,000/year consume medium to high amounts of country food in their diets (for definition see Report 3-85). The reason for this continued high use of country food relates not only to the preference for country foods but the strong cultural connotations associated with traditional activities. GNWT statistics on the number of trappers in each community support the finding of continued traditional activities. The number of trappers in Fort Norman, Wrigley and Fort Simpson, although fluctuating somewhat, did not significantly change during the construction of the Norman Wells Project.

The Norman Wells Project has not caused the destruction of the native culture, instead native culture is adapting to its new set of circumstances. For example, the emergence of the native development corporations is an institutional

adaptation by natives to take advantage of business opportunities presented by this industrial project.

Would an adequate amount of the benefits from the construction of the project flow to local residents?

This question is central to assessing the success of the project. The native employment levels have already been discussed and it was noted that approximately 22% of the labour force was native in each survey season. Household incomes rose at the height of the construction period but there were minimal differences in income between the pre-construction period in 1982 and the post-construction in 1985 for the permanent households in the region.

There were, however, two important innovations pertaining to native participation which resulted from the Norman Wells Project. The first is the establishment of Shehtah Drilling Ltd., a joint venture between Esso Resources Canada Ltd. and the two native organizations, the Dene Nation and the Metis Association of the N.W.T.. This innovation allowed direct participation and ownership for native people in the construction of the Norman Wells Project. It also increased the experience of native people in drilling operations and business management. This type of ownership structure, between private firms and native organizations, may provide a model for increasing native participation for future industrial projects. The second innovation was the band owned development corporations. These development corporations were the vehicle for the bands to become more actively involved in the construction of the project. Bosworth Creek Enterprises Ltd. in Norman Wells and Tulita Developments Ltd. in Fort Norman were able to obtain contracts to work directly on the Norman Wells Project and have been successful in completing these contracts as well as providing employment opportunities for their members. The Deh Cho Corporation Ltd. in Fort Simpson received the contract to complete the highway into Wrigley and provided employment for many natives in the region.

Would most of the benefits flow to southern Canada?

There have been two forms of leakage which have been examined by the Norman Wells Socio-Economic Impact Monitoring Program. The largest amount was through business expenditures. Close to \$300 million dollars was leaked to southern Canada to build the Norman Wells Project. Although this is an extremely high total it is difficult to imagine ways in which it could be reduced. Much of the central processing facility in Norman Wells and the steel pipe was prefabricated in Edmonton and Regina. Given the size of the business community in the region, large business expenditure leakages are almost impossible to avoid. It was noted in the previous section that many northern businesses received contracts. As the business community in the north becomes more diversified and if the companies develop an even stricter policy of northern business preference, leakages from business expenditures for future industrial projects may be reduced.

The other form of leakage which was examined was through consumer spending in southern Canada. Over \$5 million dollars leaked from the region to southern Canada through consumer spending during the project and although this figure is considerably lower than business leakage, it is much more difficult to explain. The main items which residents in the region, particularly in Norman Wells, purchased in southern Canada were clothing and groceries. The main reasons that residents travelled south to purchase these items are the lower prices in southern Canada and the much wider selection available in southern cities.

Although it is nearly impossible to avoid all leakages, even through consumer spending, this \$5 million figure could have been reduced. Government could provide subsidies for local businesses to allow lower prices and encourage the residents to purchase grocery items from the local businesses. There were no businesses in Norman Wells solely dedicated to selling clothing during the construction of the Norman Wells Project. Governments should have helped expand local small businesses through low interest loans and other means in order to encourage local entrepreneurs and native development corporations to take advantage of business opportunities. The increased spending which would have

resulted from reductions in consumer spending leakage to southern Canada could have created many more jobs in northern firms.

4. CONCLUSION

The Norman Wells Oilfield Expansion and Pipeline Project resulted in several developments which will shape the Mackenzie Valley and the entire Northwest Territories for years to come. Some of these include the creation of a joint venture between a private firm and the native organizations, the emergence of band owned development corporations and the strengthening of role of the Dene Nation and Metis Association of the N.W.T. in the development process in the north.

The purpose of this monitoring program was to provide a database so that conclusions about the impacts of the project can be drawn in a rational and logical fashion. This purpose has been facilitated through the collection of a wide range of socio-economic variables from households and businesses in the impacted communities in the pre-construction, construction and post-construction phases. All documents produced by the Norman Wells Socio-Economic Impact Monitoring Program are available to the public and can be obtained through DIAND.

Judging the success or failure of the Norman Wells Oilfield Expansion and Pipeline Project is to a large degree a matter of personal interpretation. In assessing the success of the Norman Wells Project from the view of the monitoring program, this project has been a case of *over expectations*. For example, local residents did not receive as many jobs or increases in their income as some northerners expected. Equally important, the influx of southerners was much lower than expected and the disruption to traditional activities and native culture was less than some briefs to the public assessment inquiries had predicted. As well, the potential social impacts also seem less than what was expected.

To summarize, the benefits to the local residents from the Norman Wells Project were less than they expected, but the social costs were also lower than some predicted. In the future, the impacts and innovations which have resulted from the Norman Wells Project will have to be considered prior to construction of any other mega-project in the north.

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